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| 10/656,677      | 09/04/2003  | Jiang Fan            | 2775-PAT            | 8803             |

30084 7590 11/17/2005

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EXAMINER

WALKER, KEITH D

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1745

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/656,677

Applicant(s)

FAN ET AL.

Examiner

Keith Walker

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I, Claims 1-18 & 26 in the reply filed on is acknowledged.

### ***Information Disclosure Statement***

The information disclosure statement filed has been placed in the application file and the information referred to therein has been considered as to the merits.

### ***Drawings***

The drawings received are acceptable for examination purposes.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-26 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the coating of active material particles such as lithium manganese oxide and lithium cobalt oxide, does not reasonably provide enablement for all particles. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. The claims are drawn to a coating on any kind of particle and the specification only enables the coating of the lithium-metal active material particles.

### ***Claim Rejections - 35 USC § 102***

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated by US Publication 2002/0028380 (Tango).

Tango teaches an electrode with active material particles of lithium manganese oxide coated with a hydrophobic material of polyvinylidene fluoride and a conductive carbon material, acetylene black ([0077]). The electrolyte used in the battery is LiBF<sub>4</sub> and after forming the battery, the electrolyte coats the active material particles ([0040]).

3. Claims 1-17 & 26 are rejected under 35 U.S.C. 102(e) as being anticipated by JP Publication 2002-37364 (Nagura).

Nagura teaches a lithium secondary battery with a coating on the electrode's active material particles, lithium manganese oxide (Abstract, [0003]). The coating comprises a binding hydrophobic polymer such as polyvinylidene fluoride, an electrically conductive additive of carbon and an ion conductive additive such as LiBF<sub>4</sub> ([0014-0023]). The electrically conductive additive can also be aluminum, where the ratio of coating weight to particle weight is less than 20 percent ([0027]).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 18 & 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjo.

The teachings of Tanjo as described above are incorporated herein.

Tanjo teaches a coating to particle ratio of about 33% ([0077]). The different parts of the coating produce different properties for the electrode. For instance, the polyvinylidene fluoride provides for a hydrophilic electrode but inhibits the conductivity, while the carbon provides conductivity to the electrode. It would have been obvious to one having ordinary skill at the time of the invention to vary the coating to particle weight ratio to optimize the ratio of hydrophobic and conductive properties, since it is held that discovering an optimum value of a result effective variable involves only routine skill in the art (MPEP 2144.05).

Regarding claim 18, Tanjo teaches coating the active material particles with carbon to increase the conductivity of the electrode, but fails to teach the use of aluminum. Since aluminum is used as the current collector for the electrode material, the use of the aluminum in the coating of the electrode material would provide better contact between the two substances since contact between the same materials would hinder any corrosion due to electro-potential differences. It would have been obvious to

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one skilled in the art to have chosen aluminum as an equivalent conductive material to coat the particles, since the selection of a material on the basis of its suitability for the intended use is a matter of design choice.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Walker whose telephone number is 571-272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KW

  
**PATRICK JOSEPH RYAN**  
**SUPERVISORY PATENT EXAMINER**